

Study on Molecular Characterisation of Anti-Microbial Resistance in *Salmonella* Enterica Seroovar typhi and paratyphi from blood culture isolates in a tertiary care hospital .

Abstract: Introduction : Enteric fever caused by *Salmonella* enterica serovar typhi and paratyphi that remains a global health problem , especially in developing countries like India . The emergence of antimicrobial resistance is a problem in the management of enteric fever . **Aim :** The aim of the study is to isolate, identify *Salmonella* typhi and *Salmonella* paratyphi from blood culture and to detect its anti-microbial resistance pattern , to study the molecular characterization of resistance genes . **Materials and Methods :** Prospectively, 250 clinically suspected enteric fever cases were subjected for blood culture and sensitivity at Coimbatore Medical College & Hospital over a period of one year. The antimicrobial resistance pattern and mechanism of resistance determined by molecular methods . **Results :** A total of 28 blood culture positive *Salmonella* enterica were isolated from 250 blood culture samples. Out of which , 24 (86%) *Salmonella* typhi and 4 (14%) *Salmonella* paratyphi A were isolated . Enteric fever common among males (68%) and in young adults (32%). The 25% of the isolated S.typhi strains and 50% of S.paratyphi A were resistant to Nalidixic acid , Pefloxacin and Ciprofloxacin. A single strain (4%) was found to be Multi-drug resistant to Chloramphenicol, Cotrimoxazole, Ampicillin. Six fluoroquinolone resistant S.typhi and two S.paratyphi A isolates were found to be negative for plasmid mediated quinolone resistance genes - qnrA, qnrB and qnrS . All the six fluoroquinolone resistant isolates showed mutations in gyrA gene 4 of them showed mutations in parC gene in the quinolone resistance determining region. The mutations observed in gyrA gene was at position 83 serine replaced by phenyl alanine and at position 87 aspartic acid replaced by asparagine. Whereas in parC gene mutation was detected at position 57 threonine replaced by serine and at position 80 serine was replaced by isoleucine . **Conclusion :** Typhoidal *Salmonellae* isolated were mostly resistant to fluoroquinolones , which was due to mutations in the quinolone resistance determining region (QRDR) of gyrA and parC gene .The emergence of antimicrobial resistance by *Salmonellae* enterica adds to the complexity in treating the patients . To conclude , narrowing of therapeutic options warrants the control of diseases through proper sanitation , personal hygiene measures , safe water supply , detection and treatment of Typhoid carriers and adoption of vaccination .

Key words : Enteric fever , *Salmonella* enterica , antimicrobial resistance .